

Appl. No. 08/970,066
Amendment After Final dated April 6, 2004
Reply to Office Action of October 9, 2003

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

Claims 1 – 27 (canceled)

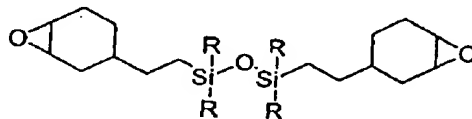
Claim 28 (currently amended): A volume holographic recording medium comprising an acid generator capable of producing an acid upon exposure to actinic radiation; a binder; a difunctional epoxide monomer or oligomer; and a polyfunctional epoxide monomer or oligomer, the difunctional and polyfunctional epoxide monomers or oligomers being capable of undergoing cationic polymerization initiated by the acid produced from the acid generator, wherein said binder does not inhibit cationic polymerization of said difunctional and polyfunctional monomers or oligomers and the refractive index of said binder is significantly different from that of the polymerized difunctional and polyfunctional monomers or oligomers;[[.]] and wherein said recording medium is capable of forming a volume hologram solely by cationic polymerization initiated by exposure to imagewise actinic radiation essentially free from material capable of free radical polymerization.

Claim 29 (previously amended): A volume holographic recording medium according to Claim 28 wherein at least one of the difunctional epoxide monomer or oligomer and the polyfunctional epoxide monomer or oligomer comprises a siloxane.

Claim 30 (previously amended): A volume holographic recording medium according to Claim 28 wherein at least one of the difunctional epoxide monomer or oligomer and the polyfunctional epoxide monomer or oligomer comprises a cycloalkene oxide.

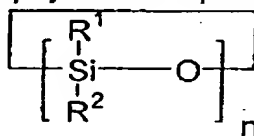
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Claim 31 (previously amended). A volume holographic recording medium according to Claim 30 wherein the difunctional epoxide monomer is of the formula



wherein each R independently is an alkyl or cycloalkyl group.

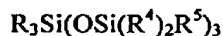
Claim 32 (previously amended): A volume holographic recording medium according to Claim 29 wherein the polyfunctional epoxide monomer is of the formula:



wherein each group R^1 is, independently, a monovalent substituted or unsubstituted C_{1-12} alkyl, C_{1-12} cycloalkyl, aralkyl or aryl group; each group R^2 is, independently, R^1 or a monovalent epoxy functional group having 2-10 carbon atoms, with the proviso that at least three of the groups R^2 are epoxy functional; and n is from 3-10.

Claim 33 (previously amended): A volume holographic recording medium according to Claim 32 wherein the polyfunctional epoxide monomer is 1,3,5,7-tetrakis(2-(3,4-epoxycyclo-hexyl)ethyl)-1,3,5,7-tetramethylcyclotetrasiloxane.

Claim 34 (previously amended): A volume holographic recording medium according to claim 29 wherein the polyfunctional epoxide monomer is of the formula:



R_3 is an $OSi(R^4)_2R^5$ grouping, or a monovalent substituted or unsubstituted C_{1-12} alkyl, C_{1-12} cycloalkyl, aralkyl or aryl group; each group R^4 is, independently, a monovalent substituted or unsubstituted C_{1-12} alkyl, C_{1-12} cycloalkyl, aralkyl or aryl group; and

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each group R^5 is, independently, a monovalent epoxy functional group having 2-10 carbon atoms.

Claim 35 (previously amended): A volume holographic recording medium according to Claim 34 wherein R_3 is a methyl group or an $OSi(R^4)_2R^5$ grouping, each group R^4 is a methyl group, and each group R^5 is a 2-(3,4-epoxycyclohexyl)ethyl grouping.

Claim 36 (previously amended): A volume holographic recording medium according to Claim 29 wherein the polyfunctional epoxide monomer is of the formula:



each group R^6 is, independently, a monovalent substituted or unsubstituted C_{1-12} alkyl, C_{1-12} cycloalkyl, aralkyl or aryl group; each group R^7 is, independently, a monovalent substituted or unsubstituted C_{1-12} alkyl, C_{1-12} cycloalkyl, aralkyl or aryl group; each group R^8 is, independently, a monovalent epoxy functional group having 2-10 carbon atoms, p is an integer equal to or greater than 3 and q is an integer.

Claim 37 (previously amended). A volume holographic recording medium according to Claim 36 wherein each group R^6 and R^7 is an alkyl group.

Claim 38 (previously amended): A volume holographic recording medium according to Claim 37 wherein each group R^8 is a 2-(3, 4-epoxycyclohexyl)ethyl grouping and p and q are approximately equal.

Claim 39 (previously amended): A volume holographic recording medium according to Claim 28 comprising from about 0.2 to about 5 parts by weight of the difunctional epoxide monomer or oligomer per part by weight of the polyfunctional epoxide monomer or oligomer.

Claim 40 (previously amended): A volume holographic recording medium according to Claim 28 comprising from about 0.16 to about 5 parts by weight of the

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binder per total part by weight of the difunctional epoxide monomer or oligomer and the polyfunctional epoxide monomer or oligomer.